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136A Blanket authorization to charge fees	<input type="checkbox"/>	EBCC.AD Notice of C.AD due to EBC update	<input type="checkbox"/>		<input type="checkbox"/>

SYNTHESIS OF MACROCYCLIC POLYMERS BY RING INSERTION
POLYMERIZATION OF CYCLIC OLEFIN MONOMERS

ACKNOWLEDGEMENT OF GOVERNMENT SUPPORT

PS
6/3/05
[0001] The U.S. Government has certain rights in this invention pursuant to Grant No. CHE 011946 awarded by the National Science Foundation.

CROSS-REFERENCE TO RELATED APPLICATIONS

[0002] This application claims priority under 35 U.S.C. §119(e)(1) to Provisional U.S. Patent Application Serial No. 60/400,400, filed August 1, 2002, the disclosure of which is incorporated by reference herein in its entirety.

TECHNICAL FIELD

[0003] This invention relates generally to the synthesis of cyclic polymers, and more particularly to the synthesis of cyclic polymers via ring-opening metathesis polymerization (ROMP) reactions using a Group 8 transition metal complex as the metathesis catalyst. Cyclic polymers provided herein have a variety of uses in the pharmaceutical, biomedical, organic synthesis and chemical industries.

BACKGROUND

[0004] At a yearly production rate of over 40 million tons, polyethylene remains one of the most valuable synthetic polymers in the world. It has found application in products ranging from grocery bags and milk containers to high performance fibers and medical devices. Its versatility stems from our ability to tune the material's crystallinity, mechanical strength, and thermal stability by altering the architecture of the individual polymer chains. However, the rising number of applications for polyethylene demands its material properties to be broadened even further.

[0005] Most efforts directed to altering the physical properties of polyethylene and other polymers have focused on methods for increasing the structural complexity of the polymer rather than on making more simple topological modifications that could be quite significant. For example, cyclization of a linear precursor to form a cyclic polymer conceptually varies the structure only minimally, but the physical properties of a macrocycle would be expected to differ